STATE OF NORTH CAROLINA — IN THE GENERAL
NEW HANOVER COUNTY — COURT OF JUSTICE
SUPERIOR COURT
DIVISION
FILE NO. 07CVS 4453

CATHY BATTON, Executrix *
of the Estate of Dewey *
Batton, Deceased *
Plaintiff *
vs. *
CSX TRANSPORTATION, INC. *
Defendant *

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Deposition of PETER G. SHIELDS, M.D., taken on Friday, September 26, 2008, beginning at 9:00 a.m., at Lombardi Comprehensive Cancer Center, Georgetown University Medical Center, 3800 Reservoir Road. N.W., Washington, D.C., before Linda Ann Crockett, a Notary Public.

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Reported by:
Linda A. Crockett

APPEARANCES:

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THE PROCEEDINGS

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STIPULATIONS

It is stipulated and agreed by and between counsel for the respective parties that the reading and signing of this deposition by the witness is hereby not waived.

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PETER G. SHIELDS, M.D.,

first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY MR. FRIELING:

Q. Good morning.

A. Good morning.

Q. My name is Scott Frieling. We met off the record. We have not met before; is that true?

A. That's correct.

Q. Have you been deposed before, Doctor?

A. Yes.

Q. How many times, roughly?

A. Somewhere between 10 and 20.

Q. Just so you know, if you need a break at any time, just let me know. If you don't

understand my question, just ask me to rephrase it and I'll do so. Okay?

A. Okay.

Q. What did you bring with you today?

A. I have a copy of my report. I have some research articles. I have Dr. Omalu, O-M-A-L-U, his report. I have a two-page exposure history summary provided to me by Mr. Gordon, a pathology report by Dr. Banks.

Q. I can attach all of these, I assume?

A. Yes, you can attach every one.

MR. FRIELING: I brought a copy of the report to attach as Exhibit 1.

(Whereupon, Shields Deposition Exhibit No. 1, report of Dr. Shields; No. 2, medico-legal report from Dr. Omalu; No. 3, surgical pathology report; No. 4, exposure history summary; and No. 5, stack of medical articles, marked.)

MR. FRIELING: Exhibit 4 is going to be the exposure history. That's the title of the document. I just want to let the court reporter know that it is double-sided, and therefore, should be copied accordingly. It's okay if the exhibit is not double-sided.

Actually, several of these exhibits are double-sided.

Exhibit 5 is a stack of medical articles produced by Dr. Shields today. I'm going to attach them collectively.

BY MR. FRIELING:

Q. So Exhibit Number 1, that's a copy of your report in this case?

A. Yes, it is.

Q. And there's some handwriting in the top right-hand corner; is that your handwriting?

A. That's my handwriting.

Q. What does it say?

A. Dewey Batton depo, Banks report, Huitt report, either Albans or Albers report; I'm not good with my own handwriting sometimes. Cathy Batton depo and the Omalu depo.

Q. What are those notations?

A. Other things that I have reviewed relevant to this case.

Q. Exhibit 2, tell us what that is?

A. The July 14, 2008 report from Dr. Bennet Omalu.

Q. Have you also reviewed his autopsy

findings?

A. Yes, I have.

Q. You don't have a copy of that report?

A. Not with me.

Q. Exhibit Number 3, tell us what that is, sir?

A. This is the report from Dr. Banks, date of service was 7-29-08 and the date reported was 8-27-08.

Q. And Exhibit 4, can you tell me what that is, please?

A. This is a summary of several depositions that provide testimony regarding the potential exposures for Dewey Batton.

Q. And Exhibit 5 -- let's stay with Exhibit 4 for a second. This was provided to you by CSX attorneys?

A. Mr. Gordon.

Q. And Mr. Gordon is a CSX lawyer?

A. I think that's true.

Q. Did you have any input into the creation of that document there?

A. No.

Q. Did you read those depositions that are cited in this?

A. Some of them.

Q. Tell me which ones, please.

A. Actually, I read the one from Dewey Batton.

Q. So you read Dewey Batton's deposition in this case?

A. That's correct.

Q. Any others?

A. I read one other, which I neglected to put on the top of my report. At this point some of the details are coming together. So I would only be guessing at which one I read.

Q. So you believe you read another -- was it a co-worker deposition?

A. It was a co-worker deposition, correct.

Q. You believe you read another co-worker deposition, but you don't remember whose it was?

A. That's correct.

Q. And the summary that's in front of you right now provided to you does not refresh your recollection which one it was?

A. No. Some of the details are coming together for me. But I don't want to guess.

Q. What do you mean when you say some of the details are coming together for you?

A. In terms of what he did while working for CSX and what the testimony was across the different depositions.

Q. Do I understand you to be saying that some of these things kind of overlap and you just can't remember which person said what?

A. That's correct.

Q. Exhibit 5 is a stack, as we mentioned, the medical articles?

A. Yes, these are scientific publications.

Q. Are these articles cited in your report?

A. I believe every one is cited in my report, correct.

Q. Did the defense lawyers in this case provide you with any of those articles?

A. No. I did all of my own primary research.

Q. Did they tell you to look for any specific articles?

A. No. There were a list of articles that were provided by Dr. Omalu, as well as a

list of articles that the attorneys thought you all believed were relevant to this case. But I had had virtually all of those articles that were primary research.

Q. If I understand you correctly, all of the research that's included in your reference list was your own work, true?

A. Yes.

Q. You said you've been deposed 10 to 20 times. Can you tell me what kind of cases those were?

A. They're pretty much all related to cancer, although some of them will have additional themes around cancer, but my involvement in the cases were all cancer-focused. They are all involved in the toxic tort or chemical/carcinogen exposure category. They are for both defense and plaintiffs, and they represent a variety of settings, ranging from railroad exposures for workers, environmental exposures in communities. I have been involved in a number of tobacco company cases, looking at the toxicity, toxicology and carcinogenicity, as well as behavior for tobacco products.

Q. That's a good summary. Have you testified in trial?

A. Yes.

Q. How many times have you done that?

A. I believe four times.

Q. What type of cases were those?

A. Two of them were defense; two of them were plaintiff. One was an asbestos and mesothelioma case. One was a class action suit against the Philip Morris tobacco company. Another was a case of a woman who was afraid of getting cancer following alleged exposure to PCBs. And the fourth case was relating to an alleged environmental exposure down in Texas for a woman who developed gastric cancer.

Q. So am I correct, the two plaintiffs that you testified on behalf of were the mesothelioma case, yes?

A. That's one of them.

Q. And the other would be the tobacco plaintiff case?

A. That's correct.

Q. And so the two defense cases would have been the PCB case and the gastric cancer, I think is what you said?

A. Yes.

Q. Do PCBs cause cancer in humans?

A. We don't have any measurable and sufficient evidence for that.

Q. So in your opinion today PCBs, there's not sufficient evidence to conclude that PCBs cause cancer in humans, true?

A. That's correct.

Q. What is IARC's positions on whether PCBs cause cancer in humans?

A. They list that as probably human carcinogens, one or two grades below known carcinogens.

Q. Is it one or two?

A. I don't remember offhand.

Q. Do you agree that PCBs are probably a carcinogen?

A. It depends on the framework that you're referring to.

Q. You can't answer my question?

A. Not the way you phrase it.

Q. What's the National Toxicology Program's view about PCBs?

A. I don't remember the designation offhand, but it is something similar to IARC's

designation.

Q. Do you agree with NTP's position?

A. Again, it depends on the context of the question that you're asking.

Q. What do you mean by that?

A. If you're talking about from a regulatory and risk assessment perspective, that's one way to look at it. If you're talking about whether it's really causing cancer in people, that's a different issue.

Q. Is NTP a regulatory?

A. NTP collects data for use in regulatory studies, yes.

Q. So is NTP a regulatory?

A. I don't think so, no.

Q. Is IARC a regulatory?

A. No, it's not.

Q. You've testified for the railroad before this case?

A. Yes.

Q. Tell me about that.

A. In depositions, as --

Q. Can I stop you?

A. Sure. I've testified as an expert witness in a few cases on behalf of the

railroad and also the trial that I testified for for the gastric cancer was also on behalf of one of the railroads.

Q. Have you worked for Mr. Gordon's office before?

A. I don't believe so.

Q. What did the other railroad cases that you were deposed in, what were the allegations in those cases?

A. Well, they were all cancer allegations. And the types of cancers run the gamut from hematologic cancers, I believe a couple of solid cancers as well.

Q. Including this case, in how many cases have you testified on behalf of the railroad before?

A. I would be guessing. Certainly more than five. Maybe ten.

Q. Some of them were blood cancers?

A. Hematologic.

Q. What kind of hematologic?

A. Multi-myeloma, leukemia, lymphomas.

Q. Do you recall how many multiple myelomas?

A. Not offhand.

Q. How about leukemias?

A. That I would be just guessing.

Q. The same with lymphoma?

A. Yes.

Q. Have you ever come to the conclusion that a railroad worker in one of those cases had some occupational exposure that caused or contributed to their disease?

A. I believe my testimony for all of them was that their cancers were not work-related.

Q. We talked about your trial testimony a moment ago. Do you recall that?

A. Yes.

Q. You mentioned a couple cases that you did on behalf of plaintiffs. What other cases have you done on behalf of plaintiffs that you were deposed on, if any?

A. Yes, there were. I have been deposed in a consumer fraud case against RJ Reynolds. I have been deposed in another class action suit against RJ Reynolds. I was deposed in a civil RICO case. In that case I had the opportunity to be deposed by the attorneys of all five major tobacco companies at the same time.

Q. So you've been deposed in some tobacco cases that you've testified on behalf of plaintiffs, true?

A. That's correct.

Q. Any other chemical of interest besides tobacco that you provided testimony on behalf of plaintiffs, and I understand you did testify in an asbestos case, true?

A. Yes, that's correct.

Q. Any others?

A. Not that I'm recalling.

Q. How many times do you think, an estimate is fine, that you've testified on behalf of plaintiffs in tobacco cases?

A. Well, I think the list I just gave you is complete. So we'd have to count.

Q. I had four down. Four plus the one at trial.

A. That sounds about right.

Q. Did you give a deposition in that asbestos case?

A. I don't believe so.

Q. What was your testimony?

A. That chrysotile asbestos contributed to the plaintiff's mesothelioma.

Q. Do you believe chrysotile causes mesothelioma in humans?

A. I believe it can.

Q. Have you provided testimony in cases where a plaintiff has alleged benzene exposure caused their illness?

A. Yes.

Q. How many times?

A. I'd say about a handful.

Q. Is that four?

A. More or less. Four, maybe six.

Q. In each of those cases did you conclude that the person's exposure did not cause their disease or illness?

A. Well, every one of those cases lacked evidence of benzene exposure, if I remember correctly. And in every one of those cases I did testify that I did not believe their cancers were work-related.

Q. So in each one of those cases where someone alleged benzene exposure and that benzene exposure resulted in some illness, you concluded otherwise, true?

A. Well, the claim was that benzene was part of an exposure contained in diesel exhaust

or some solids, or something like that. And in those cases I provided opinions similar to what I'll be providing here, which is that you have to look at what they were exposed to, not what you theoretically are guessing what they were exposed to.

MR. FRIELING: I'm going to object to the nonresponsive portion.

Q. But in each of those cases you concluded that benzene did not contribute to the disease parameters, true?

A. In each of those cases I said there was no documentation of exposure to benzene, so it was hard to make an opinion either way.

Q. So in each case where someone's alleged benzene exposure that you've testified in, you've concluded that there was no sufficient evidence that they were exposed to benzene, true?

A. That's correct.

Q. I want to attach next a copy of your CV, at least the one that I have. Tell me if that's current?

(Whereupon, Shields Deposition Exhibit No. 6, curriculum vitae, marked.)

A. It's not current. This gets updated maybe every two or four weeks.

MR. FRIELING: Frank, can I get a current one?

MR. GORDON: Sure. Do you want it right now?

MR. FRIELING: If you've got one. This one is dated July 25.

MR. GORDON: That's the one I have.

MR. FRIELING: Can we get one from the doctor?

MR. GORDON: Now or later?

MR. FRIELING: Later.

MR. GORDON: Yes.

BY MR. FRIELING:

Q. I want to talk about your practice currently, and I want to do that kind of in conjunction with looking through your CV. Is that a correct copy of your CV as of July 25, 2008?

A. It has 36 pages without flipping through to make sure that every page is here --

Q. I can tell you that's what was produced to us.

A. It looks like it's complete.

Q. As of July 25, 2008, true?

A. That's correct.

Q. So tell me what a typical week is for you, Doctor?

A. I'm chuckling. A typical week probably includes at least 50, maybe 80 hours of work, in addition to family time. So I see patients; I supervise a large laboratory staff; I provide research administrative management and mentoring; I serve on a number of committees for both the university as well as outside organizations; I'm involved in some administrative roles here.

Q. So I guess what I'm looking for is, you get up in the morning and you come here, about what time is it?

A. If I could rephrase your question. I get up in the morning around 4:00 and I'll work for several hours and then I'll come in.

Q. Do you work at home?

A. Yes, I tend to work equal the amount at home as I do here.

Q. So you work a couple hours when you get up. What do you do during that time period?

A. I work at least a couple of hours when I get up, or I'm up late the night before. It's usually one or the other. I'm doing research; I'm reviewing research articles, writing papers, writing grants, reviewing litigation cases, such as this one. I'll spend an hour or two answering e-mails and giving thought to them, helping other people do their research.

Q. Then you come into work at some point?

A. That's correct.

Q. What do you do?

A. It depends on the day. Typically my days have meetings or activities every 30 to 60 minutes. They could be on a Monday I start off meeting with some of the faculty and the medical residents and review all of the medical cases from over the weekend. Then I actually have a half hour break. And then I have a conference call with other investigators, the National Cancer Institute and the tobacco companies grants we have.

After that I'm meeting with the post-doctoral and pre-doctoral fellows, meeting with collaborators up in Buffalo for breast

cancer, or a basic science team here where we have a synergy meeting. Noon on Mondays I think are generally free. They may get filled up with something.

Then at 1:00 I meet with the chief of staff at the hospital, as well as one of the chief administrators and the chief of service for the department of medicine. It usually goes until about 2:30. If I'm lucky I have a half hour break. At 3:00 still a break. At 3:30 I have a conference call with a breast cancer screening clinic that I run. At 4:00 or 4:30 there's a meeting either with other senior leaders here at the cancer center, or there's a conference call. That's Mondays.

Tuesdays are mostly patient days or clinic days, from about 9:00 until 1:00 or so. Clinical team of investigators who are doing clinical trials. At 2:15 it's either free or the other weeks I have a conference call with investigators on tobacco studies. And then the afternoon is regularly scheduled meetings, depending on who needs to see me. That's Tuesdays.

Q. How often in your week do you see

patients?

A. At least every Tuesday. And then it depends on whether I need to see a patient for some reason other than that. It also depends on when I'm on hospital service. I do that several months a year. For example, in October in that schedule I have to add an additional 2 or 3 hours a day so I can round at the hospital.

Q. In what capacity do you see patients?

A. I guess I'm not sure what that question is. I'm their physician.

Q. Are you their primary treating oncologist?

A. More often it's hematology. And then the answer would be yes. In the hospital service then we also do consultations for patients that may not be minor, they may be patients of other hematologists or oncologists in our department. We have a division of about 20-some-odd hematologists, oncologists.

Q. Are you board certified in hematology?

A. Actually, I'm not any longer board certified in hematology. I'm board certified in oncology. I was board certified in

hematology. I never got around to redoing the boards. They expire after ten years.

Q. So you took board exam when?

A. I think the hematology board I believe -- well, it's on my CV.

Q. Feel free to look at it, please.

A. I was board certified in oncology in 1989 and in hematology in 1990.

Q. And you're looking at Page 2 there?

A. That's correct.

Q. Are you board certified in forensic pathology?

A. No.

Q. Do you know what that is?

A. I know conceptually what it is, yes.

Q. What is it?

A. It's -- did you say forensic pathology?

Q. Yes.

A. So it's a specialty that looks at tissues from people and makes a diagnosis.

Q. And you're not board certified in pathology, true?

A. That's correct.

Q. Have you ever sat for either of those

exams?

A. No.

Q. Have you ever sat for any other board exams other than oncology, hematology, and of course, internal medicine?

A. That's right.

Q. That's it?

A. That's right.

Q. What is pathology, more generally?

A. Pathology is the study of tissues and fluids to make diagnoses.

Q. And that's not your area of expertise?

A. I am not a board certified pathologist, no.

Q. Is there a board certification available for occupational medicine?

A. I believe there is.

Q. You haven't taken that, have you?

A. No.

Q. And what is occupational medicine?

A. It's a specialty that looks at diseases in workers.

Q. Workers who may be exposed to different things while doing their job, yes?

A. That would include that, and there are

other aspects of the occupational medicine practice as well.

Q. Workers who may have joint or muscle problems from repetition in their job?

A. That's right, that's an example.

Q. I reviewed your CV, obviously, you seem to have -- you don't seem to, you have a strong background in molecular epidemiology, true?

A. That's correct.

Q. Have you done any original research in epidemiology as opposed to molecular -- human epidemiology studies?

A. I don't understand that question.

Q. As a lawyer who has been doing this for a long time, I think of epidemiology in terms of cohort studies, workers who have been exposed to certain substances, statistical things to determine incident rates, that kind of thing. Have you done any of that type of work as opposed to molecular?

A. I guess I still don't understand that. Maybe you don't understand the difference between epidemiology and molecular epidemiology.

Q. That's certainly possible. Why don't you tell me what molecular epidemiology is.

A. What you just described for epidemiology is more like epidemiology. I mean, where we are today, I think what you're trying to refer to is the old way we used to do epidemiology which was sort of black box associations. Most researching epidemiologists today understand that they have the tools available to understand biological hypotheses in epidemiology. That's what we do now, whether it's a cohort study or a case control study. We're investigating biological hypotheses usually with some sort of biomarker. So the jargon over time has been called molecular epidemiology but in fact, in many cases we just dropped that qualifier of molecular. We just call ourselves epidemiologists.

Q. Have you studied a worker cohort or something like that to determine whether they were at risk for anything based on exposures?

A. I have done that, yes.

Q. Can you tell me where? Take a look at your CV and let me know.

A. Obviously, there have been studies where the workers, we actually did not publish the paper. So there will be studies that will be in addition to the CV.

Q. While you're looking, do you have a degree in epidemiology?

A. No, I don't. So there's a number of lung cancer studies that we've done, and I can give you the numbers, where it's one study that we've looked at a number of different biomarkers. In that study we routinely look at the work histories provided to us by questionnaires.

Q. Are those studies of occupational exposures to tobacco smoke?

A. No.

Q. I'm asking about occupational exposures?

A. Yes, and my answer was about that.

Q. I don't understand. What do you mean?

A. Well, we have and we continue to publish from a large lung cancer study that was conducted in Baltimore and as part of that study we collected data on the study subjects' work histories, and depending on the biomarker

and the research question we have, we will look at that occupational data as well.

Q. So are you saying that in the Baltimore lung cancer study you're looking for occupational causes of lung cancer, at least potentially?

A. In that study, that's correct.

Q. Like what?

A. Like which occupations?

Q. Like what types of exposures.

A. The questionnaire is about an hour, hour and a half, and it has probably ten minutes worth of questions like were you exposed to this or that or what's your usual work title and industry, what did you do before that? There's a lot of data that's actually collected.

Q. You're going to examine their work history information in order to determine whether there are any associations between that work history and lung cancer?

A. That's right.

Q. And what was that on your CV, Doctor?

A. Any of the papers -- not all of the papers would have necessarily indicated data

that was collected and analyzed related to the worker data. You were asking about studies. In that --

Q. Let's talk about publications. Can you just pinpoint those for me. I'm interested in peer-reviewed publications.

A. Did you limit it to epidemiology studies?

Q. That's right.

A. Because there are other publications obviously in medicine journals.

So there's a number of papers that deal with environmental exposures and also several review papers on here that deal with the occupational setting in particular. And I was also mentioning before the lung cancer study. We also have a breast cancer study in upstate New York where we're looking at the environment as well as occupational data as well. In both of those studies I don't recall whether the occupational data analysis had actually gotten into peer-reviewed papers.

Q. The question is I'm looking for peer-reviewed papers, publications, that involve the epidemiology of occupationally

exposed persons?

A. So we have -- there's a paper on the medical surveillance in PCB-exposed persons.

Q. Can you give me the number?

A. Number 2, which if I recall correctly was a peer-reviewed paper.

Q. What page?

A. 24.

Q. In your bibliography, which starts on Page 12, it starts peer-reviewed papers?

A. Yes. That's interesting. Because it's not actually labeled correctly, because it should be peer-reviewed research publications. Because if you look at -- I have to change that. If you look on Page 24 it actually says review papers, editorials and book chapters, including peer-reviewed papers.

Q. Let's start on Page 12. You have the question in mind. I'm looking for peer-reviewed research publications involving epidemiology of occupationally exposed persons?

A. So, as I mentioned for both the lung cancer study that we've done as well as the breast cancer study, we have looked at a number of occupational-related hypotheses. Whether

they have gotten into any of these papers or not, I can't recall offhand.

Q. You can't point me to one specific paper that deals with these issues?

A. Some of these papers were published 10, 15 years ago. Not offhand, no.

Q. Did you say page 24?

A. That's right.

Q. Let's go to Page 24. There's a title here "review papers, editorials and book chapters."

A. That's right.

Q. Now, is this titled correctly?

A. Yes.

Q. Now, is there anything under here in this section that would qualify as a peer-reviewed paper that deals with epidemiology of occupationally exposed persons?

A. Number 2, quite frankly, I think was peer-reviewed. But it may not have been. Number 4 I'd have to go back and look. The title is environmental cancer, but I think we also brought up occupational exposures there as well. That was definitely peer-reviewed. That was in the Journal of the American Medical

Association. I would have to go back both to the primary articles as well as the review articles that deals with polycyclic aromatic hydrocarbons that's present in tobacco smoke. It's also an environmental exposure.

Q. Do PAHs cause cancer in people?

A. At sufficient exposures.

Q. Lung cancer?

A. That's correct.

Q. Anything else?

A. And skin cancer.

Q. Any others here that you can identify today?

A. Number 17 I'm pretty sure was peer-reviewed. Again, some of these were published more than ten years ago. So I'd have to look to see if they have specific occupation sections on them. I think they do, so that's why I'm giving them to you. Maybe number 20, number 24, number 29. Number 29 may not have been peer-reviewed; I'm not sure about that.

So some of the book chapters that I wrote certainly had peer reviews, and we got editorial comments back, but that would be by the editor. So I've published in several

editions in the textbook called Cancer Principles and Practice of Oncology, and I've been coauthoring the paper with Stuart Yuspa on the principles of carcinogenesis, and those routinely deal with occupational --

Q. Were you looking at a specific number there or --

A. There are several. I'm looking at 18, for example. But we have published in subsequent editions.

Q. These are book chapters?

A. That's right. And we get extensive edits back from the editor.

Q. That's the peer-reviewed process in that situation?

A. Yes. It depends on how you want to define peer review, of course, because we know who is giving us the comments. It's not a blinded peer review. And 33 goes into that category as well.

Q. And that would have epidemiology regarding occupationally exposed people?

A. Yes. Number 40, I don't recall either way whether that was peer-reviewed. That's a workshop summary. So sometimes they're not

peer-reviewed. It was for applying biotechnologies to the study of occupational cancer. Number 48. Number 49 was an editorial that I wrote and the senior editor gave extensive comments, so that was peer-reviewed, but not blinded. And Number 42 was the book chapter.

Q. I'm not interested in the presentations.

A. Right. I was looking at the book editor. I was an editor in the book "Carcinogens in the Workplace," as well as "Cancer Risk Assessment", and "Molecular Epidemiology of Cancer." There were chapters in those books on occupational risks as well.

Q. What I'd like for you to do is go back to page 12 and tell me if you published anything regarding the epidemiology of benzene-exposed populations. I notice, I think there was one here, and it involved heated cooking oil vapors, I guess that volatilized benzene in some way?

A. That's correct.

Q. I don't remember what number it was. Any others?

A. Well, there were at least two publications related to that study. But that was not occupational. That was a study of women in the homes in China who were pretty substantially exposed to these heated cooking oil vapors.

Q. What cancer did that look at, that study?

A. We were actually looking at documenting the exposures and what were the effects on short-term biomarkers. We were involved in a larger study of lung cancer, but that data never got published.

Q. Does benzene cause lung cancer in humans?

A. I don't think we have the evidence to make that conclusion.

Q. So any other -- and I'm interested in occupational exposures. And Doctor, I want to do the same thing with solvents and mineral spirits. So if you can do that collectively.

A. I'll have to go back to Page 12. So you're talking benzene, solvents and mineral spirits?

Q. Correct.

A. For the first group of papers while I was involved in some studies related to benzene exposures including some of the Chinese studies, I don't think any of them ever got mature enough to reach scientific publication, so I can't see any offhand.

Q. So no papers that have been -- let me rephrase that. No peer-reviewed research publications regarding occupational exposures of benzene, mineral spirits or solvents, true?

A. I believe that's correct.

Q. How about the review papers, editorials and book chapters?

A. For sure the book chapters that I've written with Stuart Yuspa in the DeVita textbook, which is one of the most widely read textbooks on cancer, in the last one we had a specific section on benzene.

Q. Which one is that?

A. I think 42.

Q. The cancer risk assessment?

A. You're good at finding the word processing problems in this document. The top of 28 is the first 42.

Q. 42 you believe has a section on

benzene, correct?

A. Yes. I'm sure that the other chapters in that series also discuss benzene.

Q. Did you write the part about benzene?

A. Yes.

Q. Did you write the chapter on benzene?

A. The whole chapter is on benzene. The chapter is on chemical carcinogenesis. Each time we do that we decide to highlight a specific exposure. I believe this time it was benzene's turn.

Q. That would be in the 7th edition?

A. I believe so, unless it was in the one before that, but I think it was this time we did that.

Q. Anything else?

A. On Page 27, Number 44 -- I'm sorry, you wanted peer-reviewed, correct?

Q. Why don't you tell me what you've got?

A. A book chapter that I wrote in a book that I edited. So I edited it myself, Number 44. So I don't think calling myself would be peer-reviewed. At any rate, that's about how do you assess cancer in an individual. I assume that I brought up benzene or solvent

exposure. But we'd have to look.

Q. You're not sure about that, right?

A. That's correct.

Q. The one you're sure about at this point is the first 42 at the top of Page 28?

A. That's correct.

Q. None others in that section, right?

A. That's correct.

Q. How about --

A. I'm sorry. I'm not done in the review article section yet. I believe that's it.

Q. Do you have a master's degree?

A. No.

MR. FRIELING: Let's take a break.

(Recess.)

BY MR. FRIELING:

Q. Dr. Shields, we're back after a short break. Is it your opinion that benzene can cause MDS in humans?

A. At sufficient doses benzene can cause MDS, at least some types of MDS.

Q. What types?

A. There have been some studies that, when examined, indicate that it may not cause all types of MDS. Which types, I don't

remember. I think it's the refractory anemia with ringed sideroblasts, it either does or doesn't. That's the category standing out in my mind.

Q. Have you reached a conclusion, Doctor, whether benzene can cause all forms of MDS in humans?

A. I'm aware -- I do believe that sufficient exposure to benzene can cause at least some types of MDS, maybe all types of MDS. I think it just has not been studied well enough to know whether or not there are some types that it doesn't. But there is certainly some thought that it is the case.

Q. Does benzene cause any forms of leukemia in humans?

A. Yes, benzene can cause AML, acute myologic leukemia as well as chronic myologic leukemia in humans.

Q. AML and CML?

A. That's right.

Q. Do you know what the position is of IARC on whether benzene can cause MDS in humans?

A. IARC usually doesn't take positions of

a chemical causing a particular type of cancer. They usually classify a carcinogen in their final conclusions as either a known, probable, and I forget the third category type of carcinogens. They usually don't make statements that benzene is the cause of this or that. They do that in their reviews, but they don't make a final conclusion in that area.

Q. Do you know whether IARC has stated whether benzene can cause MDS in humans?

A. I think you just asked me that and I think I just answered.

Q. Do you know if they have or haven't?

A. I have not looked at the IARC reviews on benzene at some time. I'm sure they discussed MDS. But generally they don't make a final conclusion about particular cancer end points.

Q. How about NTP, has NTP stated that benzene can cause MDS?

A. I don't know either way.

Q. Has NTP stated that benzene can cause leukemia in humans?

A. I know that NTP classifies benzene as a human carcinogen. Again, whether they

specify that this is the type of cancer that can cause, I don't recall if they do that.

Q. Is NTP a well-respected organization in your field?

A. Well, the National Toxicology Program is part of The National Institute of Environmental -- Environmental Health Sciences. And sure, they're respected.

Q. Is IARC respected?

A. Sure.

Q. Now, you actively treat patients with MDS?

A. Correct.

Q. How many a year do you estimate?

A. I'm trying to think about how to answer that question, because obviously MDS can go on for a long time; that's the good news. So I have MDS patients that I'm seeing every week or every other week and then some I only see every two to three months.

Q. How about new cases per year, just an estimate?

A. Where I'm the primary hematologist it's probably about maybe as much as one a month. Then on the hospital service it could

be several. And then there's those that we care for as a group; there's many more of that.

Q. Now, do you make a diagnosis of MDS in your patients?

A. Sure, with the examining pathologist.

Q. So do you make a pathological diagnosis in your patients?

A. I will review bone marrow slides, discuss them with the pathologist. But I myself do not provide a pathological diagnosis.

Q. Have you ever concluded that one of your patients had some type of chemical exposure that resulted in their MDS?

A. Not that I recall.

Q. How about leukemia patients, I assume you treat leukemia in patients?

A. Yes.

Q. Have you ever concluded that one of your leukemia patients had their disease from occupational exposure or any chemical exposure?

A. In the Washington area we're not heavily industrialized. So it would not be common in this area to do that. I don't recall if we have or not. Certainly I recall conversations with both patients and medical

students and residents about it. But I don't recall anyone where we came to that conclusion.

Q. Is that in your career?

A. I've been in practice since `87. It's a little hard to remember. I don't recall any offhand.

Q. Do you do autopsies?

A. No.

Q. Have you ever done autopsies?

A. I have been present at autopsies.

Q. Have you done autopsies yourself?

A. No.

Q. Do you look at pathology from people who have been embalmed?

A. Doing autopsies on people who are embalmed is a very unusual practice.

Q. My question was, do you look at pathology of people who have been embalmed?

A. It's very unusual. I have never done it.

Q. You did it in this case, right?

A. I looked at the microscope slides from this case, that's correct.

Q. That's pathology, yes?

A. That's right. I thought you were

referring to my clinical practice.

Q. I was originally. Just to make sure, in your clinical practice have you ever looked at pathology slides from tissue that's been embalmed?

A. No. We take care of live people.

Q. So I added up your testimony. Would you say about one in five you're testifying on behalf of the plaintiff, four out of five defendant?

A. In depositions or trials?

Q. Depositions.

A. Maybe. You could be off by one.

Q. That's about right?

A. Between one and two, yes.

Q. How much do you charge right now for your time in this case?

A. $490 an hour.

Q. Is that for deposition time or is that for trial time, or research?

A. That's for non-testimony time.

Q. How about testimony time; how much do you charge for testimony time, like today?

A. There's a rate for a half day versus the whole day. The whole day is $5,500. I

don't recall what the half day is. But it's something more than half of that.

Q. For a full day of testimony it would be $5,500?

A. That's correct.

Q. More than half of that for a half day; is that true?

A. That's right.

Q. How much time have you put into this case?

A. I'm not sure I can estimate. I haven't looked at the hours.

Q. I get to know. So you're going to have to just do your best.

A. You want me to guess?

Q. I want you to give me your best estimate.

A. I'd have to give you my best guess.

Q. Okay. Do that.

A. I'll guess at 40 to 50.

Q. Who would know the answer to that question?

A. Well, I could know the answer to that question if I look at the invoices and counted up the hours.

Q. Have you already sent bills in this case?

A. Yes, I have.

Q. How many?

A. I don't know. A couple.

Q. Are those included in your file for this case?

A. My file at home?

Q. Wherever you keep your file for this case.

A. Yes, I have copies of the invoices.

MR. FRIELING: Frank, I'd like to see those, please?

MR. GORDON: Right now?

MR. FRIELING: He doesn't have them right now. I don't think that's possible.

MR. GORDON: I'll trade you invoices. You give me all your experts and I'll give you all mine.

MR. FRIELING: All I'm asking for is an estimate of how much time he's got in this case.

MR. GORDON: He just gave you that.

MR. FRIELING: He told me it was a guess.

MR. GORDON: I'll be glad to trade with you.

MR. FRIELING: Sure. We'll see about that.

BY MR. FRIELING:

Q. Your best guess is 40 to 50 hours?

A. Sure.

Q. At $490 an hour?

A. That's right.

Q. Let's take a look at the report. I think it's Exhibit 1. You brought that with you today, correct?

A. That's correct.

Q. Now, the first paragraph here describes some of the materials that you have, right?

A. That's right.

Q. But it seems incomplete to me. And I'm not saying it was meant to be a complete list. But that's not all the materials you had, correct?

A. Well, I've added the materials that I've handwritten at the top of the page.

Q. The Dewey Batton deposition, right?

A. That's right.

Q. The Banks report, yes?

A. Well, the Banks report, as well as the Huitt and Albers report would have come after this was written.

Q. The Banks report, yes?

A. I have reviewed that, yes.

Q. The Huitt report?

A. Yes.

Q. And the Albers report?

A. I reviewed that.

Q. And then on the right it says Cathy Batton depo?

A. That's correct.

Q. And Omalu report?

A. Depo.

Q. You did have the Omalu deposition before you wrote this report?

A. Yes. And, in fact, on Page 24 where I provide a critique of Dr. Omalu, it cites that I have a deposition for that as well.

Q. And you also had some other materials. You had an affidavit for Mr. Batton, yes?

A. That's correct.

Q. Do you have everything --

A. And I have that cited here on Page 3.

Q. Do you have everything that you looked at in one place at your house?

A. I have -- everything is electronic on my computer in a folder.

Q. And that's everything that was provided to you?

A. There are things that I would have looked at that are not necessarily in that folder. But everything that's been provided for me in the Batton case ends up in that computer folder.

MR. FRIELING: We'll probably make a request for that.

Q. But nonetheless, this paragraph here on the first page, that's not complete, correct?

A. Right. I mean, it doesn't claim that it's complete. But nonetheless, that's right.

Q. Did you review Dr. Baker's deposition?

A. No, I have not.

Q. Do you know who he is?

A. I believe he is one of the plaintiff experts in this case.

Q. So you don't have any specific disagreements with anything he said in his

deposition, right, because you haven't reviewed it?

A. Right, I have not reviewed it.

Q. What I'd like to know here is how this report was generated. First off, did you write this entire report?

A. Yes.

Q. By your own hand?

A. I typed it.

Q. You typed it yourself?

A. Yes.

Q. Good for you. Now, did any lawyers for the defendants contribute anything in this report?

A. There was no contribution. I believe Mr. Gordon picked up some of the typos in here and we had those corrected.

Q. Did he contribute anything substantive, any changes; did he mention there should be changes, anything?

A. I don't think so.

Q. For each section, then, it's completely your own?

A. Yes.

Q. We'll go through that, then. If you

go to Page 3, please. As you said, you looked at Mr. Batton's affidavit, true?

A. That's right.

Q. And you read his deposition, yes?

A. That's right.

Q. Scope of opinions. In this first paragraph here the last sentence that starts with "organic solvents," do you see that?

A. Yes.

Q. Do you know how many cleaners were available out at the Hamlet Yard where he worked in the `70s, early `80s?

A. Firsthand, no.

Q. I'm just asking if you reviewed that or had that in mind or took that into consideration when you wrote this?

A. The ones that were in the yard itself.

Q. The ones that were available to use?

MR. GORDON: Objection.

A. I have some general knowledge of what was used by railroads, and in particular, CSX over some of the years. I won't have a comprehensive or complete knowledge what would be available to him at that yard in particular, I would have no idea.

Q. You understand, then, there are different cleaners for different purposes, yes?

A. Yes.

Q. And you understand that some of these cleaners are stored in 55-gallon drums, yes?

A. That is my understanding, correct.

Q. And that's from reading some of the depositions in this case you got that understanding?

A. And also what I've observed myself.

Q. Have you been out to the Hamlet Yard before?

A. No.

Q. What yard have you been out to?

A. A yard just outside -- the Cumberland Yard, Hagerstown, somewhere in Maryland.

Q. Was that a CSX yard?

A. Yes.

Q. Was that at the request of an attorney?

A. It was years ago. It may have been my request or a joint idea.

Q. And it was in preparation for litigation, I assume?

A. Broadly, I'm not sure we had a

specific case, we had either a just finished case or a case coming up. But I thought it would be worthwhile to go and get some firsthand knowledge of what's going on in the railroad yards.

Q. Why is that?

A. I felt it would be helpful for me to understand work titles, work activities and potential exposures.

Q. This was the Cumberland Yard, you said?

A. I think I'm remembering that correctly.

Q. So you've personally observed some 55-gallon drums, true?

A. I believe that's true.

Q. Who did you go with?

A. A lawyer named -- two lawyers, Jim Turner and Beth Kramer.

Q. These are lawyers that represent CSX?

A. I believe that's the case.

Q. Do you know how Mr. Gordon found you, came to contact you?

A. I don't know specifically how he was referred to me, no.

Q. But he called you up one day; is that right?

A. Or shot me an e-mail, something like that.

Q. Was it a call or an e-mail the first time?

A. I don't remember.

Q. What did the e-mail say, if it was an e-mail?

A. I don't remember. So I don't know what the content of the e-mail would be.

Q. Do you remember what he asked you the first time he talked to you, what that conversation was about?

A. I don't remember the specifics. I'm sure he described the case. I get a fair amount of these calls. I usually don't take notes. My first question is usually what's the time frame.

Q. Did you take notes this time?

A. No.

Q. Going back to my original question, do you know what types of cleaners were available in 55-gallon drums at the Hamlet Yard in the early `70s?

A. Not offhand. Let's put it this way, not that I have seen documents or other evidence either way.

Q. So the answer is no?

A. The answer is I don't know all the cleaners that were used at that particular yard, that's correct.

Q. I'm going to reask it, because that's not what I asked you. Do you know what cleaners were available in 55-gallon drums at the Hamlet Yard in the 1970s?

A. I don't know all of the cleaners that were available in that yard in 55-gallon drums, no.

Q. Do you know which cleaners were labeled as solvents in 55-gallon drums?

A. I would assume that the drums wouldn't be labeled solvents. They would have a particular chemical name on them.

Q. Why would you make that assumption?

A. You don't buy solvents. You buy a particular product.

Q. You don't have any knowledge whether the word solvent was the label on any of these drums?

A. I don't have any knowledge of that particular label either way.

Q. You don't know if the mineral spirits that were stored out there were kept in drums that were labeled solvent?

A. I wouldn't know either way.

Q. Further down in this second paragraph under scope of opinions on Page 3 it appears you did some PubMed searches; is that right?

A. That's right.

Q. And it lists some terms that you used; is that true?

A. That's right.

Q. Did you use the term benzene?

A. It's possible. I don't remember either way.

Q. But benzene is not listed here, true?

A. Benzene is not listed here, that's correct.

Q. This is intended to write down what you searched for?

A. It was intended to show you the scope of the search.

Q. It doesn't include benzene, at least listed here?

A. That's correct. I believe I do specifically discuss benzene in the report, though.

Q. Could you turn to Page 8, please? Can I see that, please? Our copy didn't get the graphs, the copy that was produced to us.

A. Let me have that back for a second. I noticed too that my copy didn't print well. So I printed out an extra page.

Q. You have a section in here of Dr. Omalu's autopsy report?

A. That's correct.

Q. I'm going to ask you if you agree or disagree with A through J? Do you agree with A?

A. No.

Q. Why is that?

A. It's a mildly hypercellular marrow. And he states for age, I'm not aware that there's any criteria reference ranges in hypercellularity by age.

Q. How about B?

A. I agree that all of the hematopoietic lineages are present.

Q. C?

A. I agree that there was some increased numbers of megakaryocytes.

Q. D?

A. I agree that there was some mild atypical megakaryocytes, yes.

Q. E?

A. I didn't see any hypolobulated megakaryocytes.

Q. Did Dr. Banks?

A. I'd have to go back to the report, but I don't think so.

Q. And you're reviewing Dr. Banks' report right now, true?

A. That's correct.

Q. Have you reviewed his deposition?

A. No. He didn't note hypolobulated megakaryocytes.

Q. Do you know if he saw them?

A. It's not in his report. That's all I know.

Q. But you don't agree with E, true?

A. I didn't see these, no.

Q. Again, you're not a pathologist, right?

A. That's correct.

Q. F, do you agree with that?

A. I did not see any micro-megakaryocytes.

Q. Do you know if Dr. Banks did?

A. It's not in his report.

Q. How about G?

A. Yes, there was definitely maturation of myeloid lineage to segmented neutrophils.

Q. How about H?

A. I would agree that there was some increased myeloid-erythroid cell ratio. I'm hedging on this. I specifically didn't comment on that because I think that's a very difficult interpretation to make from a biopsy. It's not the way that I would be comfortable doing it. I guess I would answer I don't agree or disagree with that.

Q. How about I?

A. It's actually the same answer as H. I don't think you really can make that call from a biopsy.

Q. Do you know if Dr. Banks agreed or disagreed with that?

A. He doesn't have it in his report.

Q. So you don't know?

A. It's not in his report. That's all I know.

Q. How about J?

A. I think that's something you can't make from a -- at least from this biopsy. But I don't agree with it.

Q. I'm sorry?

A. I don't agree with it. I don't think you can make that diagnosis from this biopsy.

MR. FRIELING: Let's take a break.

(Recess.)

BY MR. FRIELING:

Q. Doctor, did you ask the attorneys at CSX if you could talk to some of the co-workers in this case, figure out about the exposure?

A. No, I didn't.

Q. You just relied on what they had sent you and that summary?

A. Actually, I relied on what Mr. Batton testified to.

Q. You're not relying on Exhibit 4 at all?

A. I am assuming that what Mr. Batton is reporting is accurate for the sake of my opinions. I understand that there is a dispute

about what the actual exposure occurs. I felt like it was prudent for me to assume the worst case, which is what Mr. Batton reported.

Q. My question is you're not relying on Exhibit 4 at all for your opinions in this case?

A. That's correct.

Q. Are you relying on Dr. Banks' report at all in this case?

A. Not really. It's always helpful to know that a pathologist is concurring with what I've seen. But I'm not relying on it directly, no.

Q. Did you rule out MDS based on your pathological review?

A. Well, I ruled out MDS based on the pathological review, as well as the clinical course.

Q. I'm just talking about the pathological. Were you able to rule out MDS based on your review of the pathology?

A. I think my review of the pathology made it unlikely that this was MDS. But MDS, on the basis of a biopsy, which at best would be subtle here, is a very difficult diagnosis

to make. Looking at the immunohistochemistry stains did help to rule out MDS. But again, to rule out MDS, you have to look at both pathology as well as the clinical course.

Q. I didn't understand that. Let me ask it a different way. Is it true or not true, sir, that the pathology does not rule out MDS diagnosis?

A. The pathology makes it unlikely to have this as MDS. There are some cases where people have a clinical course consistent with MDS and we suspect that the bone marrow is not sufficient to make the diagnosis at that time. If we're correct, the test of time tells us whether we're correct or not. Bone marrows can never a hundred percent rule out myelodysplasia. But they can make it pretty unlikely that it's myelodysplasia.

Q. At least in this case the bone marrow did not one hundred percent rule out MDS in your opinion?

A. There's almost no features here of MDS to make the diagnosis. As I said, it's always possible that someone could have MDS without sufficient pathological features.

Q. Let me talk about that. Just from your understanding of pathology and MDS, what would be required in a biopsy like this to diagnose it pathologically?

A. First of all, you'd have to look at the aspirate. You would include immunohistochemistry stains and you would include cyber-genetics to make the diagnosis.

Q. With the information that you had available to you, the tissue, I should say, could you even make a diagnosis of MDS?

A. If there were severe MDS you could probably do it from a biopsy alone. Although I think most pathologists would be uncomfortable doing that. But in severe cases, yes, you probably could.

Q. What would a severe case of MDS show that would be convincing?

A. Well, you would have substantial hypocellularity; you would have dysplasia of all cell lines. Could you see -- frequently you'll see ringed sideroblasts and you'll also see an increase in myeloid blasts.

Q. And is -- I know you mentioned the WHO classification system. Is there a method to

diagnosis?

A. I didn't mention the World Health Organization.

Q. You mention it in your report.

A. So yes, you can use -- there's different classification schemes all aimed at trying to improve the way we do prediction, response and prognosis. One is by the World Health Organization, and the other one is the FAB classification of the French-American-British classification.

Q. Going back to your report on Page 8, the part that says "bone marrow and pathology review." Do you see that?

A. Yes.

Q. You're relying on your own review of the pathology in this case and not relying on Dr. Banks, true?

A. I'm not relying on Dr. Banks.

Q. I was a little confused here. There's a sentence that starts the CD34 and CD113. Do you see that?

A. Yes.

Q. Did you mean CD117?

A. That's correct.

Q. What's 113?

A. I meant 117.

Q. How often would you have an increased CD34 and CD113 immunohistochemistry stain in an MDS; do you know?

A. It helps to make the diagnosis. The sensitivity of the staining I would have to look up because I don't know offhand.

Q. If Dr. Banks said it was about half the time, coin-flip type deal, would that be consistent with your understanding?

A. Well, I certainly know it's not a hundred percent, so it's not a requirement. Whether it's 50 percent or 30 percent of the time that it's positive, I don't recall offhand. But 50/50 possible.

Q. But you just don't know?

A. That's the type of thing I would look up. Or I would be relying on the pathologist.

Q. And then you have CD31 here. That's the next one you list, correct?

A. That's right.

Q. Did the stains you saw for that show an increase in the percentage of megakaryocytes?

A. It did not look like it was increased to me. That's a fairly subtle read.

Q. If Dr. Banks said it was, you'd disagree with him on that point, the pathologist?

A. No, I wouldn't necessarily disagree with him. The way I practice is I usually sit down with the pathologist and they say here's what you see, and I'll agree or disagree.

Q. So the way you typically do things is you sit down and consult with the pathologist?

A. That's correct.

Q. You didn't do that here?

A. I did take the slide over to our pathologist here to review it.

Q. But you didn't do it with the ones that had been retained in the case by the defendants?

A. That's correct.

Q. I don't remember the answer to this. You would disagree with Dr. Banks when he said there was an increase in the percentage of megakaryocytes, as reflected in the results from the CD31?

A. I didn't notice that. But I wouldn't

disagree with him if he showed me what he was talking about. If I recall correctly about the CD31, it's not a strong stain. So it's subtle to call it increased. But he would certainly have more experience than I do on that.

Q. So you'd defer to him on that?

A. I would defer to him.

Q. I don't know how to pronounce this word, you list a myeloperoxidase stain?

A. That's right.

Q. Is that the same thing as the Factor VIII stain?

A. I don't think so.

Q. Do you know what a Factor VIII stain is?

A. Not offhand.

Q. Is it listed in his report, and that's Dr. Banks' report?

A. I'm holding Dr. Banks' report. He has a Factor VIII stain listed here.

Q. Do you know what that is, or how it relates to MDS or the diagnosis of that disease?

A. Not offhand, no. The answer is no, I'm not sure.

Q. Do you know in Mr. Batton's case whether that showed some consistency with the diagnosis of MDS?

A. I don't know either way. The slide that was sent to me was a CD31, CD34, CD117, and the MPO.

Q. Did you say MP --

A. Yes, the myeloperoxidase.

Q. What was the acronym?

A. MPO.

Q. I want to know the short way to say it too. You say here -- what is the MPO stain measuring?

A. It's one of the markers that we use for looking for acute leukemia to see if it's increased.

Q. To see if acute --

A. You look at the MPO staining as a way of supporting the diagnosis of leukemia.

Q. What does it look for?

A. Myeloperoxidase is an enzyme. That's what it's looking for in cells that are expressing MPO, and you'd have an increased number of cells.

Q. Did it show an increased number of

cells in this case?

A. I don't think so.

Q. Do you know what Dr. Banks has to say about that?

A. Don't see him reporting on the MPO here.

Q. You say it's essentially normal. To a lawyer that means it's abnormal. What does that mean?

A. It's difficult to call from a -- from bone marrow biopsy, as I mentioned. It may have been a little hypercellular, there may have been a little megakaryocytic, hyperplasia and dysplasia, from my reading. That's not entirely normal. But in the clinical context, or even looking at that bone marrow, it's hard to know if there are any clinical consequences at all from those findings.

The other thing I'll mention is that what was not provided to me which Dr. Banks did have, and I want to stand corrected, what I am relying upon is his interpretation of the iron stain, because I didn't have those slides.

Q. Let's just clean that up. You just reviewed Dr. Banks' report again and you

recalled that with respect to the iron stain, you are relying on his interpretation of that?

A. That's right, because I didn't have those slides.

Q. You didn't have those slides to review?

A. That's right.

Q. Do you do staining yourself?

A. Actually, I have done staining myself. I have technicians who regularly do immunohistochemistry staining that I supervise.

Q. But you don't do it in this case?

A. No.

Q. Do you know if -- I want to talk about the iron staining just for a minute. You understand that Dr. Banks said that there was a complete absence of iron in the tissues that he stained?

A. That's right.

Q. Had those tissues been decalcified?

A. Presumably. That's the routine processing of the blocks.

Q. You said it's the routine processing of the blocks, what do you mean by that, in what situation?

A. Well, biopsies get fixed and then put into paraffin so you can slice them. During that processing that is one of the treatments.

Q. What's the impact of decalcified tissue on the iron in the tissue?

A. It could make the iron level go down.

Q. Significantly?

A. I would assume not to zero. It doesn't go from normal to zero. It might go from normal to something less than normal. It might go from very low to zero. But not from normal to zero, no.

Q. Doctor, I just want to ask, do you think that you're capable of giving expert opinions based on pathological review?

A. I'm not a pathologist. I am certainly capable of providing diagnosis based on pathological reviews.

Q. What's the difference in those two things?

A. As a person who treats people, pathology is one of the tools that I use to make diagnoses.

Q. In consultation with a pathologist?

A. Correct.

Q. Now, I think you mentioned a moment ago that you showed the slides to somebody; is that right?

A. That's right, I reviewed those slides with one of our pathologists.

Q. Who is that?

A. His name is Bascal Khallakuri.

Q. Is it Dr. Khallakuri?

A. Yes.

Q. What did he have to say?

A. We reviewed them together. I brought it to him. I said what do you think? He basically said this was essentially a normal marrow, so one could not make the diagnosis of MDS from this marrow.

Q. Are you relying on his opinions in this case?

A. Not really. I mean, I looked at them myself. As I said, just like with Dr. Banks, it's comforting to know that what I'm seeing is concurred with by a pathologist.

Q. Now, in a clinical sense when you're making a diagnosis in one of your patients, would you ever make a diagnosis pathologically without relying on another pathologist?

A. No. I make clinical diagnoses.

Q. The next page, on Page 9 at the top, it's true that Banks' report said there was no cirrhosis, true?

A. Well, what he said there was chronic liver disease with stage 3 bridging fibrosis. That is an acronym for cirrhosis. I can't interpret that for you. I guess you should ask him.

Q. Did you read this closely?

A. I believe I read it closely.

Q. Did you read the comments at the bottom?

A. I have read them, yes. The liver shows moderately advanced scarring with bridging fibrosis but without definite cirrhosis. As I said before, my understanding is that fibrosis is part of cirrhosis. So he's not saying that there's not cirrhosis there. He's saying that there's not definite cirrhosis.

Q. Let me make sure I heard that right. You're saying Dr. Banks' opinion is he's not saying there isn't cirrhosis; he's just saying there's no definite cirrhosis?

A. I'll quote what he's saying. He says but without definite fibrosis. Bridging fibrosis is usually a component of cirrhosis. What I'm interpreting it as is he didn't see enough criteria to call it cirrhosis. So he said it was without definite cirrhosis.

Q. Do you know if stage 3 fibrosis is actually cirrhosis?

A. I don't know.

Q. You're not an expert in staging cirrhosis, true?

A. That's correct.

Q. And with respect to Mr. Batton, you don't know if he had cirrhosis or not?

A. He had an earlier pathology report from when he had his gallbladder taken out saying that he had cirrhosis.

Q. Did he have cirrhosis or not?

A. According to the pathologist who looked at his liver around the time of his gallbladder, he was diagnosed with cirrhosis of the liver.

MR. FRIELING: Object to the non-responsive portion.

Q. Doctor, in your opinion did he have

cirrhosis or not?

A. He had a pathological diagnosis of cirrhosis.

Q. Do you know?

A. Pathologically he was diagnosed with cirrhosis.

Q. But what's your opinion?

A. I did not go through looking at the records close enough to decide whether he had clinical cirrhosis or not.

Q. You don't know if Mr. Batton had clinical cirrhosis or not, true?

A. I know he had a pathological diagnosis of cirrhosis. I don't know whether he had clinical cirrhosis.

Q. It's your opinion that he had a pathological diagnosis of cirrhosis?

A. It's my opinion that he had a pathologist who reported that he had cirrhosis.

Q. But do you know if he had a pathological diagnosis of cirrhosis?

A. You asked me that. I'm answering he was given the pathological diagnosis of cirrhosis at the time he had his gallbladder out.

Q. You didn't reaffirm that or assess that in this case?

A. I reviewed only the medical records regarding the liver.

MR. FRIELING: Objection. Non-responsive.

Q. Did you confirm the pathological diagnosis of cirrhosis in Mr. Batton or not?

A. I reviewed only the medical records.

Q. Is that a yes or no?

A. I confirmed it in the medical records.

Q. You confirmed you read it in the medical records?

A. That's correct.

Q. Based on your own independent review, did you confirm or not confirm that there was a diagnosis of pathological cirrhosis?

A. I'm not sure how to answer that. I confirmed that I read it in the medical records.

Q. My question is: By looking at any pathology, Doctor, did you confirm it?

A. I did not have slides of the liver that I looked at, no.

Q. So you did not confirm in this case by

looking at pathology yourself that Mr. Batton had cirrhosis?

A. I relied on two biopsies, one saying cirrhosis one other showing liver disease.

MR. FRIELING: Objection. Non-responsive.

Q. You did not confirm by looking at pathology yourself --

A. As you asked me before. I did not look at the slides.

Q. I have to finish my question before you respond. That's how this works.

MR. GORDON: The way it doesn't work is asking the witness the same question for 15 minutes. If you're going to ask him the same question again, he ain't going to answer it.

MR. FRIELING: Let's make sure it's on the record.

MR. GORDON: Let's make sure we understand how it works since we're giving lectures of how it works.

MR. FRIELING: Let's make sure it's on the record.

MR. GORDON: It's on the record five times.

BY MR. FRIELING:

Q. You did not confirm by looking at pathology itself whether Mr. Batton had cirrhosis when he died?

A. As you've asked me several times, I'll answer again. I did not look at his liver slides.

Q. Do you look for cirrhosis in patients in your clinical practice, pathologically?

A. There will be times when I review liver biopsies with pathologists in my patients.

Q. But do you diagnose cirrhosis pathologically yourself in your patients?

A. No, I'm not a pathologist.

Q. Family history, was there anything in Mr. Batton's family history that put him at an increased risk for MDS?

A. Not that I was aware of.

Q. Social history, anything in his social history that put him at an increased risk for MDS?

A. Notwithstanding the fact that I don't think he had MDS, his smoking history certainly would put him at risk of MDS.

Q. Does smoking cause MDS in humans?

A. There's a number of epidemiologic studies that report that association.

Q. I'm just looking for a yes or no. Does smoking cause MDS in humans?

A. There's a number of epidemiologic studies that report that association.

Q. Are you capable of answering that question yes or no?

A. It's such a broad question that it depends on the data.

Q. I'm just asking in general causation terms can smoking -- tobacco smoking cause MDS in any specific person?

A. Well, epidemiology studies don't provide information about specific people. So I didn't understand the question.

Q. Can smoking, tobacco smoking cause MDS in a person?

A. I'll answer it the same way I answered it before. The epidemiologic studies show that smoking causes MDS.

Q. That's different than you answered before. How about alcohol consumption; can alcohol consumption cause MDS in humans?

A. There are certainly epidemiologic studies that say that. I don't think there's sufficient evidence to make that conclusion.

Q. Any other things from his social history that would give him an increased risk for MDS?

A. No, not other than the smoking.

Q. I want to talk about the clinical course and I think I understand just from what you've written here on Page 10, if you could go to Page 10 in your discussion. You state that his clinical course is inconsistent with MDS, and then you explain some of those reasons, true?

A. That's correct.

Q. Can you give me in your terms why his clinical course up until his time of death was inconsistent with MDS?

A. He was known to have some mild anemia before he came into the hospital around September 2007. In 2007 he came in with -- he was pretty sick. He had shortness of breath and other complaints and was found to be severely anemic. Then over several days his platelet count as well as his white count went

down as well.

So first of all, in someone who is followed as closely as he is and was at the time, MDS usually doesn't present that acutely. It usually develops more slowly over time. But nonetheless, that could happen. And it was reasonable to think at the time that within the differential would be a mild dysplasia syndrome.

They never made a diagnosis. They never made a bone marrow test. So then he was discharged -- let me go back. He was given six units of blood. They essentially corrected the anemia. His platelet count went down very well, possibly due to the six units of blood that he got. His white count went down, which was never clearly explained. But when people get into that extremis, it's not uncommon for blood counts to become abnormal and then as they get better, they get better.

He was given some medication to help boost up his white count. But then way after that it would have worn off, way after the blood that he was given would be out of his body. Now we're fast forwarding to January.

His counts were pretty good. His white count was fine; his platelet count was fine. He only had a mild anemia. MDS doesn't get better like that.

Q. You said that was January?

A. That's right. So MDS doesn't get better like that. Then he continued on for several more months. If he had the severe pancytopenia, the way Dr. Omalu claimed, and progressive or profound bone marrow failure, he would have known it.

But nonetheless, in January his counts got pretty good, and that's not what MDS does. That would be consistent with the bone marrow that we ultimately saw in April.

Q. Anything to explain -- let me ask it this way: There's been several references and medical records and I know in your report it talks about these vitamin deficiencies. You recall those, yes?

A. Yes.

Q. Can you explain how that plays into your opinion?

A. Well, he clearly had a nutrition issue. He had documented low levels of vitamin

A, copper, vitamin B-12 and I think vitamin E, if I'm remembering correctly. Certainly the iron and the copper and the B-12 deficiencies can result in depressed blood counts.

Q. Was he taking supplements?

A. When they discovered those as issues he was taking -- at least he was prescribed supplements. And I assume that he was taking them. At some point they stopped his B-12 shots some time around January. So that was stopped. But as far as I know he was taking other supplements.

Q. Iron supplements, yes?

A. It was prescribed for him.

Q. Do you know if he took those?

A. I don't know either way.

Q. Do you know if Cathy Batton, his wife, said he took them?

A. I don't recall either way.

Q. If he was taking them, why didn't his iron counts get better?

A. It's not uncommon that people have absorption of iron problem. We have to replete them with intravenous iron.

Q. Why would he be having an absorption

of iron problem?

A. Some people just do. And we never really explain the reason. Other people have specific gastrointestinal problems that preclude the absorption.

Q. Did Mr. Batton have any gastrointestinal problems that precluded the absorption?

A. I'm not an expert in vitamin absorption. When you start getting multiple vitamins like this, then you trigger other malabsorption issues. That might be a possible explanation. At the end of the day what I do know is he documented vitamin deficiencies, the ones I listed.

Q. Do you mean when he died?

A. When he died. I don't think he had a recent copper level or B-12 level or vitamin A level to document whether, A, he was actually taking the medication, and B, whether he was absorbing it. But we do know when he died he was iron deficient.

Q. Do you have any evidence that he wasn't taking his supplements?

A. I would say clinically given that his

counts got better at least through January, I'm assuming he did take his supplements. After that I don't know either way.

Q. And if the evidence is that he was taking his supplements, do you have any explanation for why his counts didn't get better?

MR. GORDON: Other than the one he just gave?

Q. Go ahead.

A. I'm confused by the question. I said all his counts got better and he was left with just the mild anemia.

Q. But we're left with tissue at the end of the day that's showing iron deficiency, correct?

A. That's right.

Q. In your opinion?

A. Well, in Dr. Banks' opinion.

Q. It's your opinion that his tissue is showing some iron deficiency, yes?

A. Based on Dr. Banks' report, yes.

Q. Okay. Understood. And that would indicate, at least from January to his death, that his iron counts were not normal, right?

A. The iron in his bone marrow was not normal, that's correct.

Q. If he was taking supplements during that time period, as he was prescribed, do you know of a reason why he wouldn't be absorbing that iron through his bone marrow?

A. Well, he was still pretty sick. I don't know whether he had an absorption issue or whether it was decreased intake that caused him originally to have the problem. After January we didn't have all of the blood counts. So for all I know, he may or may not have been copper deficient, vitamin A deficient and vitamin B-12 deficient in addition to the iron deficiency.

Q. If I understand what you're saying, you're saying that the other deficiencies could cause the iron deficiency?

A. Again, I'm not a vitamin expert. My recollection is that some of these vitamin deficiencies could potentially trigger the absorption of other ones. These specific ones, I don't recall. You asked me before about why he would have some nutrition issues. There were a couple things going on with him that we

didn't explain. We know that he had some abnormality in his liver. Before you asked me whether this was cirrhosis. We know he at least had fibrosis.

He had some other medical issues that were going on and it's possible that that could be an explanation for a problem with absorption, in addition to or instead of a decreased intake issue.

Q. Do you know if Mr. Batton had any symptoms from his liver disease?

A. I know he was having problems with nausea. That's sometimes a symptom of liver disease. Whether that was related to his liver disease, I don't know.

Q. Anything else?

A. He had weight loss. I'm assuming that was due to nutritional issues. But liver can do that as well.

Q. Anything else? I'm looking for symptoms from his liver disease?

A. That's all I can think of offhand.

Q. So it could be the weight loss. But we don't know?

A. He had a lot of reasons for weight

loss.

Q. Liver could have been one, may not have been one. You can't say for sure?

A. That's correct.

Q. The other was --

A. Nausea.

Q. Nausea?

A. There are a number of reasons why he could have had nausea.

Q. But we don't know if one of them was liver?

A. Right. And then he had issues with vomiting as well. And I sort of link that with the nausea.

Q. Understood. You note here -- going back to the deficiencies. I want to make sure I understand. If he was taking his supplements, his iron supplements, we really don't know why he was still iron deficient if he was taking his supplements?

A. Well, I have patients who are taking their iron supplements and I believe they are taking the supplements, and I still document a low iron level, then I know it's an absorption issue. Although I don't know why it's an

absorption issue. By the way, one of the things I don't recall either way was what dose of iron he was prescribed. Maybe he was not taking enough of it to replete his iron. I would have to look at that.

Q. Do you know how long he was prescribed iron supplements?

A. In January he was still taking one iron tablet per day, which by the way, would be an insufficient dose for someone who is documented with iron deficiency. He should be taking at least three a day. What happened after January for any of these, I don't know, because we don't have any further follow-ups with Dr. Paustenbach to document what medicines he was prescribing or stopping.

Q. Let me ask it this way: It is true that if he was having an absorption problem, you don't really -- you don't have an opinion as to why, true?

A. Most of the time we don't know why.

Q. And in this case you don't have an opinion as to why?

MR. GORDON: Other than the ones he's already expressed.

A. Sometimes there are interactions with these nutrients or other ones. He was obviously having a substantial problem with nutrition. So it may very well be that he was having an absorption problem because of a nutrition condition.

Q. Dr. Shields, all I'm looking for are your opinions in this case. Do you have an opinion on whether he had an absorption problem?

A. He had an absorption problem.

Q. Have you reached an opinion based on reasonable medical probability as to what caused the absorption problem?

A. In most cases we don't have that. In him we have some explanations. Whether they're the causes or not, I can't tell you for certain.

Q. Moving down here in the second paragraph on Page 10. Again, this is your report. The last sentence says, "immunophenotyping is an important method for confirming the diagnosis of MDS, such as positive staining for CD34 and CD117." Did I read that right?

A. Yes.

Q. Now, there are different types of -- or classifications of MDS according to WHO, correct, the World Health Organization?

A. Yes. We usually call it WHO.

Q. There are different classifications of MDS according to WHO?

A. Yes.

Q. And those are what?

A. What are the classifications?

Q. Yes.

A. Well, they're all derivatives -- I think I've got a table in here with the actual classification. So I can give them to you exactly.

Q. I can't read the one that's in my copy.

A. I thought I printed out another one for you.

Q. You can just tell me what they are?

A. There's -- do you want me to give you the initials?

Q. Yes.

A. There's a PRA, which is a refractory anemia; there's an RCMD, which is a refractory

cytopenia with multilineage dysplasia. There is a PSA, which is a sideroblastic anemia. And there is an RSCMD, which is a refractory sideroblastic cytopenia with multilineage dysplasia. There's a 5Q minus syndrome. And there's two types of RAEB, which is refractory anemia with excess blasts.

Q. According to WHO, when is immunohistochemistry staining relevant?

A. In all of them.

Q. Based on your understanding of the WHO classification system, you believe that the immunohistochemical staining -- I'm looking at CD34 and CD117 -- is relevant to all of those classifications?

A. Sure. I mean, immunohistochemistry staining as a diagnosis of MDS is a routine clinical practice.

Q. I know you mention this in here, but is benzene a constituent or contaminant of mineral spirits?

A. Benzene has been reported to be present in mineral spirits at trace levels.

Q. I saw you had some citations or references, you referenced I think Paustenbach

article. Do you know Dr. Paustenbach?

A. I've talked to him on the phone before. I might even have published with him.

Q. What did you publish with him?

A. I'd have to go back to my CV. I think we were working on a paper at one point. It would either be in my CV or not. If it's not there, then it's not published.

Q. What was the paper about?

A. I don't remember either way.

Q. Was it funded by industry?

A. I don't think I was -- you're really pushing my memory. Whether he was funded or not, I have no idea.

Q. How long ago was it, if you recall?

A. It would be several years ago. I may be mixing him up entirely in terms of that paper. But I have talked to him on the phone at least once before.

Q. What did you talk to him about?

A. It was a litigation case.

Q. Were you both experts in the same case?

A. I was an expert in the case. I don't recall whether he was or wasn't.

Q. What was the case about?

A. I don't remember.

Q. You don't remember the constituent or anything like that or the disease?

A. No.

Q. Have you ever heard that Dr. Paustenbach has an industry bias in his publications?

A. I have read his publications before. I would not necessarily classify him as an industry bias.

Q. I'm just asking if you've heard that he has an industry bias reputation, from anybody?

A. I certainly haven't heard that from my peers, no.

Q. Have you heard it from anybody?

A. Not that I recall. I guess I have now.

Q. I didn't say that. I just asked if you had heard it. Have you asked your peers about Dr. Paustenbach's reputation?

A. Not that I recall, no.

Q. Do you know if he's ever had any studies pulled from publications because of

improper ghost writing?

A. I don't know either way, no.

Q. Did you do an extensive literature review on how much benzene would be in mineral spirits?

A. I pulled a couple of papers on it. I wouldn't necessarily call it an extensive review, but the documents that I looked at were consistent with each other, so I relied on them.

Q. Are those listed in your references?

A. Yes.

Q. You didn't do an extensive literature review of how much benzene is in mineral spirits?

A. No. My understanding was that the amount of benzene in mineral spirits were controlled since at least the `70s to extremely low levels.

Q. Have you read Dr. Kopstein's deposition?

A. No.

Q. Do you know who he is?

A. I understand he's one of the plaintiff experts in this case.

Q. Do you know if he's given a deposition in this case?

A. No.

Q. Do you know what his opinions are in this case?

A. No.

Q. Do you know if he's published how much benzene has been in mineral spirits historically?

A. I believe there was a paper by him in the list of papers that the plaintiffs are relying on. It was given to me by Mr. Gordon. I don't even recall the title or the subject of the paper. But I'm assuming that that has some relevance to this.

Q. My question is do you know if he's published in the area of benzene levels in mineral spirits?

A. What I know is that paper, which may or may not be the subject of what you're talking about.

Q. So you don't know the subject matter of that paper?

A. I'm vaguely picturing the title, and I think it was. But I may be wrong.

Q. Did you read that paper?

A. No.

Q. Why not?

A. I just didn't.

Q. Wouldn't that provide some information for you on benzene levels historically in mineral spirits?

A. I don't know what's in the paper. So I can't answer that question.

Q. I'm sorry. I thought you said the title indicated to you that it might have some --

A. I'm vaguely recollecting that the title was -- I don't remember. For some reason it didn't appear that I needed to read that for this.

Q. So you didn't consider his testimony or his opinions at all?

A. That's correct.

Q. On Page 11 you say here "importantly, there is no evidence that Mr. Batton was exposed to benzene." Did you write that?

A. Yes.

Q. Did that come from any lawyer or anything like that, to your recollection?

A. No, I didn't see any evidence in this case that he was exposed to benzene.

Q. If he was exposed to mineral spirits, would that expose him to benzene?

A. To trace levels of benzene.

Q. So it would be benzene, it would be trace levels of benzene if he was exposed to mineral spirits?

A. If he was using mineral spirits, there is a possibly that he would be exposed to trace levels of benzene.

Q. Why would it only be a possibility?

A. The levels are so small, who knows whether any of it would have gotten into his body.

Q. What are the levels?

A. We can refer to some of the articles. But it's .01 percent or something like that.

Q. In the `70s?

A. I believe it was controlled back to the `70s. There's are some papers there that I can refer to.

Q. Yes. Why don't you take a look? I want to know which article specifically you're relying on for that proposition.

A. So this is a 2008 paper that was just recently published by Amoruso.

Q. Is that the ChemRisk, the Paustenbach article?

A. No, Paustenbach is not an author on this paper. And this was cited in my report. It says here the specification for benzene content in mineral spirits is usually less than .1 percent, but in practice benzene levels are typically below 0.005 percent due to refining and distillation techniques. It goes on to say there have been several publications dealing with current and historical information on benzene levels and mineral spirits, and he cites Carpenter 1975, which has levels at .1 percent, another paper by Carpenter in `77, a study by Patel working for the Consumer Product Safety Commission that said that in `77 typical levels of benzene in mineral spirits were in the range of 0.01 percent to 0.03 percent. And then it goes on.

Q. And this one is in International Journal of Toxicology, yes?

A. That's correct, 2008.

Q. And paid for by Exxon, right?

A. Well, some of the authors are cited as working for Exxon. Whether they paid for it or not --

Q. Have you looked at it to find out?

A. Actually, no, it was not funded by Exxon. It was funded by the American Chemistry Council Hydrocarbon Solvents panel, whose members include several companies, including Exxon. But it was actually funded by the American Chemistry Council Hydrocarbon Solvents panel.

Q. Do you know who the American Chemistry Council is?

A. I believe that's an association.

Q. Of companies --

A. Presumably, yes.

Q. -- that make products that contain benzene?

A. That's correct.

Q. Did you consider that at all in how reliable that paper was or was not?

A. The paper is citing -- often I will look at what review papers conclude and decide whether I agree or disagree with them. But I'm more interested to see what literature they

cite. Here they are citing papers that have been funded by the federal government, U.S. Consumer Product Safety Commission. So I would find that more relevant.

Q. Do you consider if a paper is funded by an interested party whether the conclusions are reliable when you read something like that?

A. Not really. I'm more interested to look at the data and make a conclusion whether or not the conclusions follow the data. And that could be -- I could agree or disagree no matter who the funding party is.

Q. Is it safe to say that you're not an expert in the historical concentration of benzene in mineral spirits, but you're relying on these papers for that part of your opinion?

A. That's correct. I'm not a chemist.

Q. Can you turn to Page 12, please?

A. Yes.

Q. You talk about alcohol drinking and vitamin A deficiency here, is that correct, and that relationship?

A. Are you talking about the last sentence?

Q. I'm talking about the paragraph that

starts vitamin A is a dietary nutrient?

A. Yes, there's some discussion of alcohol consumption.

Q. Is it your opinion that Mr. Batton's alcohol drinking that ended approximately ten years before his death in any way contributed to his vitamin A deficiency?

A. No, I don't think so.

Q. The next part talks about copper deficiency. Do you see that?

A. Yes.

Q. Was he on supplements for copper?

A. After he was diagnosed with a copper deficiency, yes.

Q. And if he took those supplements -- strike that. Do you know if he died copper deficient?

A. I don't know either way.

Q. And vitamin B-12, do you know if he died B-12 deficient?

A. I know that he stopped his shots some time around January. Vitamin B-12 actually stays in the body for a very long time. But by April I can't tell you either way. He probably had -- actually I don't know either way.

Q. The next part is methodological approaches to individual risk assessment. Did I read that right?

A. That's right.

Q. Correct me if I'm wrong, but my belief is this isn't the first time this has been used in a litigation case, is that true, this section?

A. Well, it certainly was revised for this. This section has been or derivatives of it have been used in litigation as well as publications.

Q. I assume that went all of the way through here to Page 21 where it talks about railroad work.

A. I'm sorry. What's your question?

Q. My question is all of this information -- strike that. That's a good point. Let's do it this way, starting on Page 12 at the bottom where it has the title through -- let's stop on Page 15. I want you to tell me what was changed from the previous report. I know I see Mr. Batton's name a few times.

A. I don't think I can tell you what's

been changed.

Q. So let's do it this way, then: The first paragraph under that title on Page 12, it goes through about half of Page 13, the last sentence in that paragraph says in this case, right?

A. I see that.

Q. And then it says what it says. Did you add this sentence to this paragraph? Let me ask it better. Have you used any part of this first paragraph before in a different report?

A. Yes.

Q. How much of that first paragraph did you use in a different report?

A. The concepts are certainly in probably every case that I'm dealing with specific causation. How much of the paragraph is different versus the same, I can't answer you.

Q. So did you retype all of this when you started Mr. Batton's report?

A. No. Generally I will cut and paste it from some other report and revise it.

Q. Do you know which part you cut and pasted out of here and -- cut out of a

different report and pasted it into Mr. Batton's report?

A. I would cut out the section and then revise it as appropriate to this case.

Q. So you cut out, I assume starting with the title on Page 12 to some point. Do you know what point it ended?

A. No.

Q. What kind of case did you take it out of?

A. I don't remember which case I took this out of.

Q. Was it another railroad case?

A. I don't know.

Q. On Page 15 you see the part that says target organ specificity?

A. Yes.

Q. Did you take that from a different case?

A. That's often an issue in other cases. So the concepts certainly come up in other cases and I would have started off cutting and pasting and tailoring it specifically to this case.

Q. Is that relevant for this case?

A. Absolutely.

Q. The last sentence says, for any of the chemicals at issue in this case, as listed below, there's insufficient evidence to indicate that these are multi-organ carcinogens, and almost all lack sufficient evidence for cancer risk in humans. What chemicals were you talking about in Mr. Batton's case?

A. Mineral spirits, which is composed of a number of different chemicals, benzene. So solvents, mineral spirits and benzene.

Q. Are you aware of any allegations that this multi-organ carcinogen, what any of them would be?

A. I noticed on Dr. Omalu's list of references that he provided, some of them had absolutely nothing to do with hematologic malignancies. So I was anticipating an allegation on his part that every chemical could cause cancer anywhere in one organ, then it can cause cancer in any organ.

Q. Are you aware of that opinion being made?

A. I don't recall whether Dr. Omalu

ultimately did or didn't.

Q. So the inclusion of that sentence wasn't a mistake on your part. You were actually thinking it was relevant to the issues in this case?

A. Absolutely.

Q. On Page 17, I think you start some discussion about lung cancer. The third paragraph there, the last sentence says this is thought; do you see that?

A. Yes.

Q. There's a cutoff. I assume again that you took this piece from another case, true?

A. Yes, that's true. And it was tailored to Mr. Batton's case.

Q. Let's go to the first paragraph, if we could. The third sentence starts, it is instructive to consider the scientific data for smoking and lung cancer, to place into context the allegation made by plaintiff's expert. Did I read that right?

A. Yes.

Q. Did you type that for this case or was that already in there?

A. Again, I would have cut and pasted it

and then revised it. So I don't think I can answer your question.

Q. But you still have what you cut and pasted it from on your computer at home, true?

A. That's correct, if I could figure out which one it was, yes.

Q. So going back to the third paragraph, you saw the cutoff part there?

A. Yes.

Q. What happened there?

A. It was probably as I was tailoring it I didn't cut off the whole sentence, or maybe it looks more like I accidentally cut off the rest of the sentence.

Q. When you were in the process of cutting and pasting and tailoring, something got cut off?

A. Yes. I was in the process of editing it.

Q. At the top of Page 17 you talk about latency?

A. Yes.

Q. I'm going to give you a hypothetical. If Mr. Batton was exposed to benzene at sufficient levels to cause MDS in the `70s and

early `80s and was diagnosed with MDS in 2007, would that be a sufficient latent period for that disease?

MR. GORDON: Objection to both parts of the hypothetical question.

A. So given that he is alleged to have been exposed to benzene between about `73 and `83.

Q. Right.

A. And you're asking me to assume without evidence, so it's a hypothetical, that he was exposed to some substantial amounts of benzene that could cause some types of MDS, is the latency period from `73 to `83 and he gets diagnosed in 2008 with MDS.

Q. Right.

A. Is that a plausible latency period?

MR. GORDON: The assumption is someone in 2007 diagnosed him with MDS.

A. The hypothetical is that latency period from `73 to `83 with exposure to substantial benzene, is it reasonable to have a latency period such as one gets diagnosed in 2007, the answer is no.

Q. Is it too long or too short?

A. I would expect that someone with substantial exposure to benzene would have been diagnosed earlier.

Q. What is the appropriate range of latency for somebody who is exposed to enough benzene to cause MDS?

A. I don't think we know that for MDS from the benzene studies.

Q. So how can you say that it's an inappropriate --

A. Actually, I'm basing it on leukemia studies.

Q. So then is it your opinion that you don't know what the appropriate latency period would be for benzene and MDS, true?

A. We don't know specifically for MDS. In general we know that hematologic malignancies after exposure, for example, to some chemotherapies or radiation, the latencies tend to be shorter, and I would think from a `73 start date to 2008 would be a long time, even for leukemia, but I do stand corrected from before, for MDS we don't have that data either way.

Q. So you don't have an opinion on what

the appropriate latency period would be for benzene exposure causing MDS, true?

A. I'm making an assumption that it's somewhat similar to leukemias, but in fact, MDSs are much more slowly progressive. So it may be that my assumptions are incorrect.

Q. What is it for leukemia?

A. I would have to go back to the papers, look at the Pliofilm cohort or Askoy's shoe workers to give you exact ranges. I don't recall offhand.

Q. But you think it's shorter than 35 years?

A. I recall that most people are diagnosed within 35 years. But it really gets very difficult because in an individual study you don't really know who got their leukemia related to a substantial exposure to benzene or not. So it's very difficult to say for an individual whether you have a latency period consistent with the literature or not. It just seems long to me for Mr. Batton, assuming that he had MDS, which I don't think he did.

Q. In this case for your opinions did you assume that Mr. Batton's testimony was accurate

as far as his exposure goes?

A. Yes.

Q. In your report there's nothing here about the etiology of his neurological illness. Are you giving opinions on either the form or etiology of Mr. Batton's neurological illness in this case?

A. Mr. Gordon didn't ask me to comment on his neurological illness. Of course I can't control what you will ask me.

Q. You were not asked to form opinions on that?

A. That's right. I was not asked by Mr. Gordon to form opinions on that.

MR. FRIELING: Let's take a short break.

(Recess.)

BY MR. FRIELING:

Q. Doctor, I just want to make sure I've got a clear picture of what it is you've reviewed in the case. Your report alludes to some CSX records?

A. That's right. I had Mr. Batton's CSX records. That included medical reports.

Q. So his personnel records?

A. Yes.

Q. To the extent you know. Do you know if you had any documents that would have shown what materials he used or was exposed to?

A. I don't have documents --

Q. CSX documents?

A. Yes, I don't have any CSX documents that say that he was exposed to anything.

MR. GORDON: Are you asking about surveys?

MR. FRIELING: No.

Q. I'm asking if you were given any specifications on the different types of cleaners that were available for use?

A. No, I don't have any documents that show that he was working with any cleaners.

Q. That's not what I asked you. My question was did you receive any documents that were specifications of the different kinds of cleaners?

A. Of any type of cleaners at all?

Q. Yes, that he may have used?

A. It's my understanding from them that he didn't use cleaners.

Q. From whom?

A. From Mr. Gordon.

Q. Mr. Gordon told you that Mr. Batton didn't use any cleaners in his job?

A. If I understood him correctly, that is the case.

Q. Let's talk about that. Did he tell you that Mr. Batton was lying in his deposition?

A. Actually, I didn't ask either way.

Q. What was your response to Mr. Gordon when he told you that he didn't believe Mr. Batton used cleaners in his job?

A. My response to him was the same response that I gave to you. I'm relying on Mr. Batton's testimony.

Q. So my original question was did you receive any specification of any cleaners that Mr. Batton identified in his deposition?

A. Meaning mineral spirits?

Q. Any.

MR. GORDON: He didn't identify any in his deposition.

MR. FRIELING: I think he did. Didn't he say solvents?

MR. GORDON: No. He said something

that smelled like gasoline and was yellow.

Q. Let me ask you a different question. We talked earlier in this deposition about different cleaners that were used at the railroad?

A. You asked me whether I knew what was used at that particular yard and I said I didn't know.

Q. Did you see any specifications for mineral spirits at the Hamlet Yard?

A. No.

Q. How about alkaline cleaner?

A. No.

Q. Was any of that provided to you?

A. No.

Q. We talked about the depositions that you read. Were you provided any depositions that you did not read?

A. I don't think so.

Q. Do you know?

A. I just said I don't think so.

Q. Do you know for sure?

A. I don't think so.

Q. And you were provided the little summary sheet that the lawyers created, yes, of

exposure; that's Exhibit 4, right?

A. Yes.

Q. And you're not relying on that for any reason, right?

A. Right.

Q. And then you were provided with some expert reports and I think we went over that. You were provided with Mr. Batton's affidavit, right?

A. That's correct.

Q. And you were provided with his medical records, true?

A. That's right.

Q. Anything else?

A. I was provided with a medical report summary.

Q. Is that here?

A. No. And I think that's it.

Q. And then I had a question concerning benzene exposure and MDS and benzene exposure and leukemia. I want to know what your opinion is, what dose is required of benzene to cause MDS?

A. I mean, it's hard for me to quantitate it. Certainly there are estimates in the

literature of the doses that are needed. Usually not for MDS. Usually specific for leukemia and people tend to lump them together.

From my perspective, when I approach a case like this, I look at the type of work that people do, as studied in the literature, and compare it to what is being done in the individual such as Mr. Batton. When I look at studies like Pliofilm workers or shoe manufacturers in Turkey and that sort of thing, and when I look at those exposures when they were working with products that were either benzene or 30 percent benzene and I compare it to the worst allegation here which is mineral spirits, which is something much less than one percent, then I know that we've got a huge gap in exposure levels, such that it makes it unlikely that Mr. Batton would have had sufficient exposure to benzene. Plus I'm able to look at literature about mineral spirits and the types of work that he was doing to form opinions. When you talk about specific doses it gets pretty tricky to provide those estimates.

MR. FRIELING: Objection.

Non-responsive.

Q. I just want to know if you have -- we'll do it quantitatively. Do you have a quantitative dose that Dr. Shields requires before you'll link benzene exposure to an MDS?

A. I think it's difficult to do it that way. But offhand, no.

Q. The same for leukemia?

A. That's correct.

MR. FRIELING: I'm going to request the doctor's file, and pursuant to receiving and reviewing that, I don't have any further questions.

MR. GORDON: Do you have another copy of his medical records? You all have that summary of your client's medical records.

MR. FRIELING: I want to know specifically when it was sent. That's what I want to know. If you want to send me a list of these are all the documents Bates labeled that he was sent, I can tell you what I want. My problem is he was sent some CSX documents. I want to know which ones.

MR. GORDON: He's covered it with you. But if you have more questions, I'll get with

you and tell you exactly what they are. I can't sit here and tell you that.

MR. FRIELING: I'm just saying I get to know what he was sent.

MR. GORDON: That's fine. If you need to talk to him more about it, we'll get him on the phone.

MR. FRIELING: I don't know that I will. But pursuant to that, we're through.

THE WITNESS: I'll sign it.

THE REPORTER: What would you like?

MR. FRIELING: Original and condensed.

MR. GORDON: That's fine.

(Whereupon, the deposition was concluded at 12:15 p.m.)

* * *

CERTIFICATE OF DEPONENT

I hereby certify that I have read and examined the within transcript, and the same is a true and accurate record of the testimony given by me.

Any additions or corrections that I feel are necessary, I will write on a separate sheet of paper to the original transcript.

_____

PETER G. SHIELDS, M.D.

STATE OF MARYLAND
COUNTY OF BALTIMORE

I, Linda A. Crockett, a Notary Public of the State of Maryland, do hereby certify that the within named, PETER G. SHIELDS, M.D., was deposed at the time and place herein set out, and after having been duly sworn by me, was interrogated by counsel.

I further certify that the examination was recorded stenographically by me, and this transcript is a true record of the proceedings.

I further certify that the stipulations made herein were entered into by counsel in my presence.

I further certify that I am not of counsel to any of the parties, nor an employee of counsel, nor related to any of the parties, nor in any way interested in the outcome of this action.

As witness my hand and notarial seal this 2nd day of October, 2008.

My commission expires: December 1, 2008

_____
Notary Public

INDEX OF WITNESSES

E X H I B I T S

(Attached.)